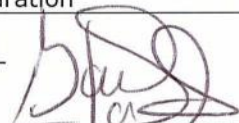


## Film OPP antibatterico

### ANTIBACTERIAL DECLARATION

According to the study supplied by IMSL - **INDUSTRIAL MICROBIOLOGICAL SERVICES LTD** (independent testing and consultancy service specialized in the microbiology of industrial processes and products),, which determines the Antibacterial Activity of Polypropylene Film Treated with Antimicrobial Agents against Escherichia coli and Staphylococcus aureus, using ISO 22196, TAGHLEEF INDUSTIRES S.L. declares that the Graphic Arts range of Antibacterial films (F138, F148, F238 and F248) containing in their composition a tested antimicrobial additive and in the percentage recommended by the raw material supplier, achieve the antimicrobial effect showed in the IMSL certification. This certificate delivered by our raw material supplier was tested using a PP base film containing the additive in similar percentages, so the antibacterial properties of our films can be confirmed with an efficiency more than **99,0 % (reduction Antibacterial activity)** based on ISO 22196.

Antibacterial Declaration		
Revision: 02.03.2020	Approved by: Research & Development Manager Ti SL Javier del Barrio	 Pág. 1 de 1



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## Film OPP antibatterico

# IMSL

## INDUSTRIAL MICROBIOLOGICAL SERVICES LTD

CERTIFICATE OF ANALYSIS

Page 1 of 1

CERTIFICATE NO. 1028342.07/9959  
CUSTOMER REF.

SAMPLE DETAILS DATE RECEIVED 15/09/2015  
ORDER NO.

METHOD: Determination of Antibacterial Activity using Test Based on MOD ISO 22196

DATE ANALYSED 16/09/2015 DATE REPORTED 18/09/2015

RESULTS (AS CFU CM<sup>-2</sup>)

SAMPLE	SPECIES	CONTACT TIME		REDUCTION (INITIAL)	
		0 hrs	24 hrs	Log 10	%
POLYPROPYLENE	<i>E coli</i>	1.1E+04	4.6E+05		
TREATED PE - 10 YEARS	<i>E coli</i>	1.1E+04	6.0E+01	2.3	99.45%
POLYPROPYLENE	<i>Staph aureus</i>	1.2E+04	2.0E+03		
TREATED PE - 10 YEARS	<i>Staph aureus</i>	1.2E+04	< 11.11	≥ 3.03	≥ 99.91%

Key: NS = Poor survival on control supplied.

The above data show the difference in the population following contact with the surface of the samples listed for 24 hours at 35°C under a RH of > 95% relative to the initial population.

IMSL MICROBIOLOGICAL SERVICES LTD  
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MANAGING DIRECTOR  
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